



Air Force Research Laboratory|AFRL

Science and Technology for Tomorrow's Air and Space Force

Success Story

CREW FATIGUE QUANTIFIED DURING ENDURING FREEDOM AIRLIFT MISSIONS



Human Effectiveness Directorate scientists and engineers (S&Es), in conjunction with Air Force Operational Test and Evaluation Center (AFOTEC) personnel, conducted an objective wartime aircrew fatigue assessment during C-17 missions to Afghanistan. Directorate S&Es expect the results of this assessment to lead to decreases in the approximately \$54M in personnel, aircraft, and property lost each year in Air Force Class A mishaps related to warfighter fatigue.



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Accomplishment

As an integral part of the Air Mobility Command's (AMC) Counter Fatigue program, S&Es from the directorate's Warfighter Fatigue Countermeasures program, at Brooks City Base, Texas, and AFOTEC, Det. 1, at Kirtland Air Force Base, New Mexico, conducted an objective wartime aircrew fatigue assessment during the round-trip C-17 missions supporting Operation ENDURING FREEDOM. These extended 22+ hour missions, with crews deployed from the continental United States, included multiple aerial refuelings.

This effort will provide a baseline for development of the AMC fatigue management policy. Data will also support the ongoing operational validation of the Sleep, Activity, Fatigue, and Task Effectiveness (SAFTE®) model that quantitatively predicts fatigue effects on human performance.

Background

Data collection during the C-17 flights included the use of psychomotor tests, activity monitors, activity logbooks, and subjective fatigue self-assessments. Part of the analysis will include a comparison of actual aircrew work and sleep performance with predicted cognitive effectiveness ratings generated by the Fatigue Avoidance Scheduling Tool (FAST™).

The FAST software interface generates cognitive effectiveness predictions over time based on the SAFTE model. The SAFTE model is a homeostatic representation of the three-process, biological mechanisms that affect cognitive and physiological capability in humans. The model is the product of over 12 years of extensive model development and comparisons of the model's algorithms to laboratory data collected over the past 20 years.

Problems associated with human fatigue are not limited to military operations. Air Force fatigue countermeasures research products also have direct application to over 20 million Americans who perform shift work and to millions who experience the adverse effects of jet lag or even a night of disrupted sleep.

Additional information

To receive more information about this or other activities in the Air Force Research Laboratory, contact TECH CONNECT, AFRL/XPTC, (800) 203-6451 and you will be directed to the appropriate laboratory expert. (03-HE-02)

Human Effectiveness
Support to the Warfighter